Measurements of Total Cross Sections at Pohang Neutron Facility

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The Pohang Neutron Facility, which consists of an electron linear accelerator, a water-cooled Ta target with a water moderator, and a time-of-flight path with an 11 m length has been operated since 2000. We report the status activities on the neutron total cross-section measurements in the neutron energy region from 0.01 eV to 100 eV by the neutron time-of-flight method at Pohang Neutron Facility. A ^{6}Li-ZnS(Ag) scintillator with a diameter of 12.5 cm and a thickness of 1.5 cm has been used as a neutron detector. The background level has been determined by using notch-filters of Co, Ta, and Cd sheets. In order to reduce the gamma rays from a Bremsstrahlung and that from a neutron capture, we have employed a neutron-gamma separation system based on their different pulse shape. The present measurements are compared with the previous ones and the evaluated data in ENDF/B-VI. The resonance parameters for several samples (Ag, Ta, and Hf) have been extracted from the transmission data by using the SAMMY code and compared with the previous ones.

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